1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$5 + 2i \text{ and } 1$$

A. $b \in [-18, -7], c \in [35.4, 40.7],$ and $d \in [-30.8, -28.8]$

B. $b \in [-6, 7], c \in [-10.4, -5.5],$ and $d \in [2.6, 6.3]$

C. $b \in [-6, 7], c \in [-4.6, -2.6],$ and $d \in [-4.2, 2.7]$

D. $b \in [10, 12], c \in [35.4, 40.7],$ and $d \in [24.9, 29.1]$

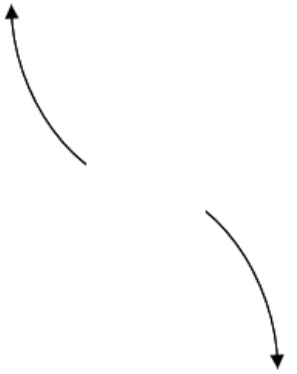
E. None of the above.

---

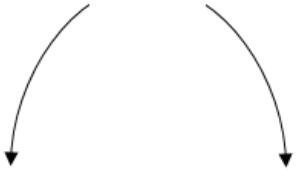
2. Describe the end behavior of the polynomial below.

$$f(x) = 7(x-4)^3(x+4)^4(x-8)^2(x+8)^2$$

A.

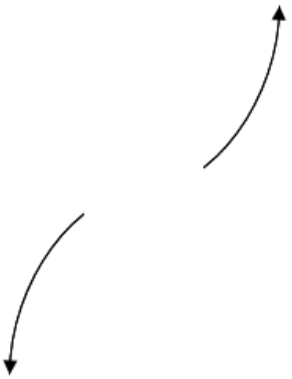


B.



C.

D.



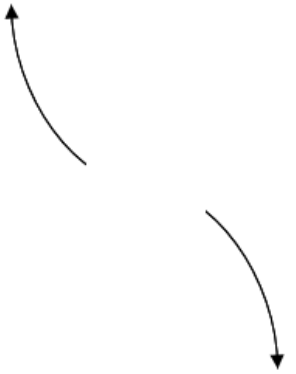
E. None of the above.

---

3. Describe the end behavior of the polynomial below.

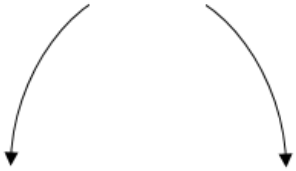
$$f(x) = 4(x+3)^2(x-3)^7(x+8)^5(x-8)^6$$

A.

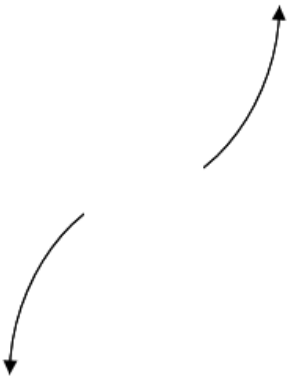


C.

B.



D.



E. None of the above.

---

4. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{-3}{4}, -7, \text{ and } \frac{-1}{3}$$

A. $a \in [12, 14], b \in [94, 98], c \in [90, 105],$ and $d \in [20, 26]$

B. $a \in [12, 14], b \in [-99, -94], c \in [90, 105],$ and $d \in [-26, -20]$

C. $a \in [12, 14], b \in [-93, -88], c \in [31, 33],$ and $d \in [20, 26]$

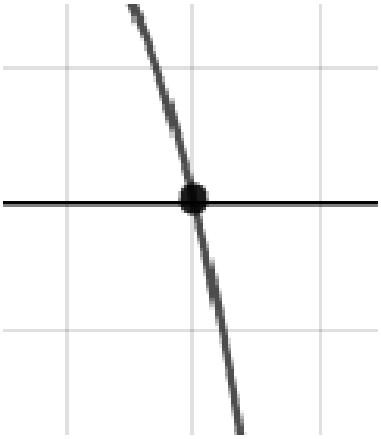
D. $a \in [12, 14], b \in [78, 86], c \in [-43, -37],$ and $d \in [-26, -20]$

E. $a \in [12, 14], b \in [94, 98], c \in [90, 105],$ and $d \in [-26, -20]$

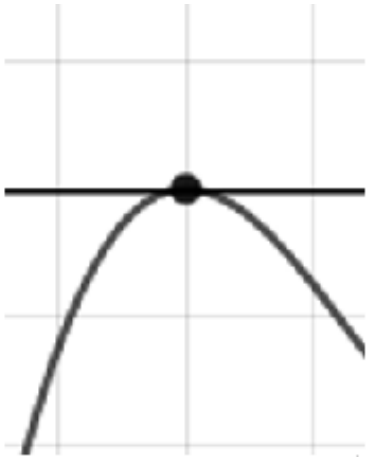
---

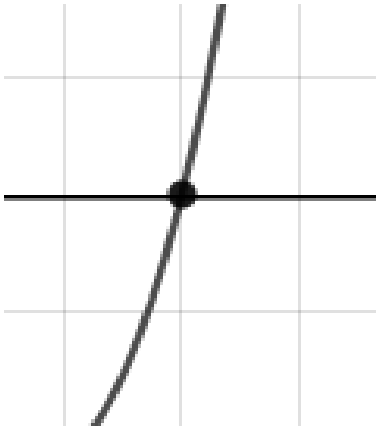
5. Describe the zero behavior of the zero $x = -9$ of the polynomial below.

$$f(x) = 2(x-4)^{10}(x+4)^{6}(x+9)^{10}(x-9)^{7}$$

A. 

C. 

B. 

D. 

E. None of the above.

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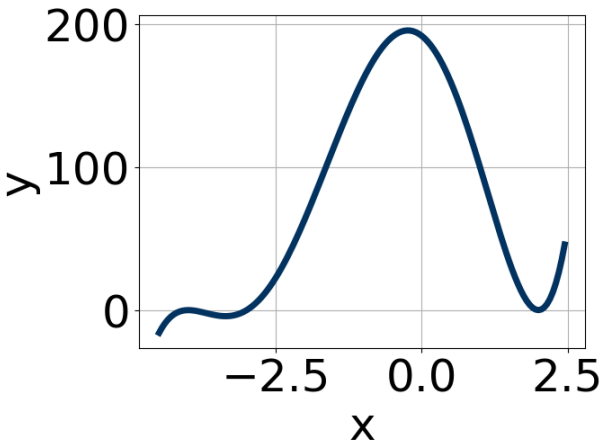
6. Which of the following equations *could* be of the graph presented below?



A. $15(x+4)^6(x-2)^7(x+3)^5$

B. $-6(x+4)^{10}(x-2)^6(x+3)^8$

C. $17(x+4)^{10}(x-2)^7(x+3)^{10}$

D. $-19(x+4)^8(x-2)^8(x+3)^7$

E. $6(x+4)^4(x-2)^8(x+3)^7$

---

7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form x^3+bx^2+cx+d.

$$2+3i \text{ and } 1$$

A. $b \in [-1.8, 1.9], c \in [-4.15, -3.21],$ and $d \in [2.99, 3.53]$

B. $b \in [-9.1, -3.5], c \in [16.78, 18.65],$ and $d \in [-14.03, -11.89]$

C. $b \in [4.7, 5.3], c \in [16.78, 18.65],$ and $d \in [11.64, 13.41]$

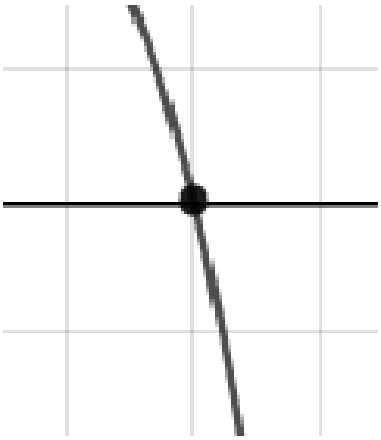
D. $b \in [-1.8, 1.9], c \in [-3.38, -1.37],$ and $d \in [1.75, 2.85]$

E. None of the above.

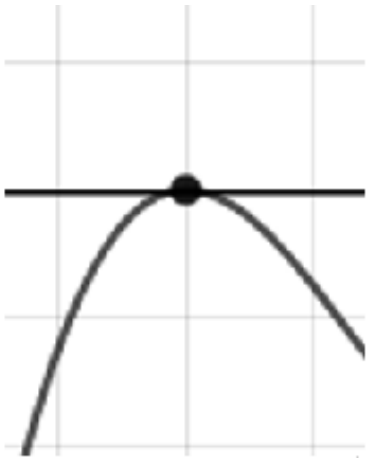
---

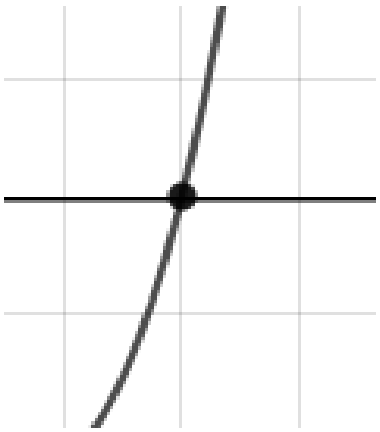
8. Describe the zero behavior of the zero $x=-4$ of the polynomial below.

$$f(x) = 6(x-4)^7(x+4)^{12}(x+3)^4(x-3)^6$$

A. 

C. 

B. 

D. 

E. None of the above.

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9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{1}{2}, \frac{5}{4}, \text{ and } \frac{-1}{5}$$

A. $a \in [37, 43], b \in [-63, -59], c \in [10, 12],$ and $d \in [4, 9]$

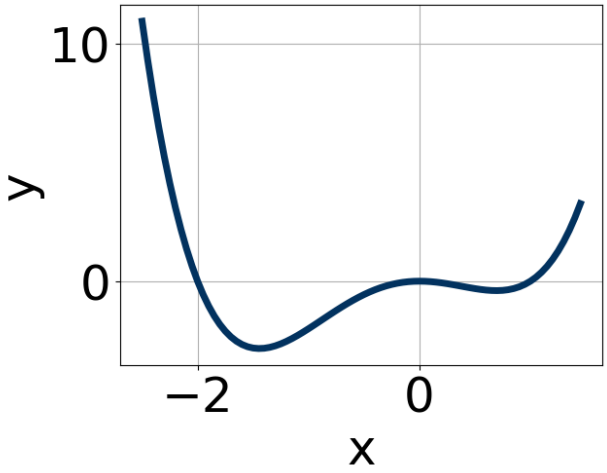
B. $a \in [37, 43], b \in [-24, -15], c \in [-38, -26],$ and $d \in [-12, -4]$

C. $a \in [37, 43], b \in [-63, -59], c \in [10, 12],$ and $d \in [-12, -4]$

D. $a \in [37, 43], b \in [74, 85], c \in [38, 41],$ and $d \in [4, 9]$

E. $a \in [37, 43], b \in [55, 66], c \in [10, 12],$ and $d \in [-12, -4]$

10. Which of the following equations *could* be of the graph presented below?



A. $-2x^8(x-1)^5(x+2)^7$

B. $13x^9(x-1)^4(x+2)^9$

C. $-14x^8(x-1)^7(x+2)^{10}$

D. $4x^4(x-1)^{11}(x+2)^{11}$

E. $7x^8(x-1)^6(x+2)^7$